REMARKS

The Office Action of September 24, 2009 and the references cited therein have been carefully reviewed. Favorable reconsideration and allowance of the claims are requested in view of the foregoing amendments and the following remarks.

I. Claim Status and Amendments

Prior to the instant amendment, claims 1-29 and 36-50 were pending in this application by way of the response filed on June 18, 2009 in reply to the third Restriction Requirement. Applicants appreciate the examiner's withdrawal of the restriction requirement persuasive.

Claims 1-29 and 36-50 have been examined on the merits and stand rejected. Claims 4-5 and 8-9 also stand objected to as being substantial duplicates.

By way of the present amendment, claim 1 has been amended to include the structural formulae I and II and the definitions of the substituents as defined in previous claim 7, and to specify that the negatively charged groups and the acidic groups that are converted to negatively charged groups at the physiological pH as defined in previous claims 4 and 5, respectively.

In claims 1-3, 10-17, 19, and 47, where appropriate, the term "derivative" has been replaced with the term "compound", as requested by the examiner.

Claim 36 has been amended to specify a method for vascular-targeted photodynamic therapy (VTP). Support can be found in original claim 36 and in the disclosure, for example, at paragraphs [0040], [0041], [0109] (i.e., page 15, lines 15-21) [0115] (i.e., page 16, lines 25-27), and [0123] of the published application, i.e., US patent application publication no. 20060142260.

Claim 37 has been amended to specify a method for photodynamic therapy of age-related macular degeneration by vascular occlusion. Support can be found in original claim 37 and in the disclosure, for example, at paragraph [0214] (i.e., page 33, lines 23-29) of the published application.

In claim 42, the term "intermediate" has been deleted.

Other minor editorial and non-narrowing revisions have been made to the claims to better conform to U.S. claim form and practice. Such revisions are non-substantive and not related to patentability. Such revisions include: revising the beginning of the claims to recite "A" or "The"; and revising the claim language to provide proper antecedent basis, punctuation, and grammar throughout the claims. In keeping with US law, the use

of "a" or "an" in patent parlance carries the meaning of "one or more".

Claims 4-9, 20-29, and 39-41 have been cancelled without prejudice or disclaimer thereto. Applicants reserve the right to file a continuation or divisional application on any cancelled subject matter.

Claims 1-3, 10-19, 36-38, and 42-50 are pending upon entry of this amendment, and these claims define patentable subject matter warranting their allowance for the reasons discussed herein.

II. Foreign Priority

Kindly acknowledge Applicants' priority claim and the papers filed therewith under 35 U.S.C. § 119(a)-(d) or (f).

On page 2 of the Office Action, the examiner argues that a reference to the prior application must be inserted at the first sentence on page 1 of the specification in order to obtain benefit of the foreign priority filing. The examiner contends that since the instant application lacks the noted appropriate reference, it fails to obtain a claim of priority to the foreign application. Applicants disagree.

Kindly note that Applicants did make reference to the priority application IL 152900 and PCT/IL03/000973 in the application data sheet (ADS) submitted with the filing of the

application, as evidenced by the documents in PAIR. In accordance with US patent practice, as enumerated at 37 CFR 1.76 (b)(6) and in MPEP §201.11 and §601.05 (Eighth Ed., Rev. 7 (July 2008)), providing the appropriate priority information in an ADS constitutes the claim for priority as required by 35 U.S.C. 119(b) and §1.55(a). Thus, Applicants do not need to amend page 1 of the specification to reference the priority information in order to obtain benefit to the foreign claim. Please acknowledge Applicants' priority claim and the papers filed therewith under 35 U.S.C. § 119(a)-(d) or (f).

III. Claim Objections

Claims 4-5 and 8-9 have been objected to for being substantial duplicates for the reasons set forth on page 4 of the Office Action. The present amendment renders the objections moot by canceling the noted claims, without prejudice.

IV. Written Description Rejection

Claims 1-6 have been rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement for the reasons set forth in item 3 on pages 4-9 of the Office Action. This rejection is respectfully traversed.

The test for sufficiency of written description is whether the disclosure reasonably conveys to the artisan that the inventor had possession at the time of filing of the subject matter which is claimed. M.P.E.P., Eighth Ed., Rev. 7 (July 2008) at § 2163, I, 2100-159, 1st column, 2nd paragraph.

This test may be satisfied by: (1) a reduction to practice; (2) a reduction to drawings/chemical formulas; (3) a disclosure of relevant identifying characteristics, such as structure or other physical and/or chemical properties, to sufficiently describe the claimed invention in full, clear, concise and exact terms; (4) a disclosure of functional characteristics coupled with a known or disclosed correlation between function and structure; (5) a sufficient description of a representative number of species; or (6) a combination of the above, sufficient to show the inventors were in possession of the invention. M.P.E.P. (Eighth Ed., Rev. 7 (July 2008) at § 2163,II, A, 3a(i)-(ii).

In the instant case, the claims are drawn to bacteriochlorophyll derivatives containing at least one negatively charged group or an acidic group that is converted to a negatively charged group under physiological conditions. On page 5, the examiner objected to the term "bacteriochlorophyll derivative" in claim 1, since it is not accompanied by a generic formula indicating the structure of the bacteriochlorophyll

derivative. The examiner is of the opinion that the specification does not provide sufficient description of what is meant by "bacteriochlorophyll derivative" such that it would be obvious for a skilled person, relying solely on the description and claim 1, that the inventors had possession of the claimed invention at the time the application was filed. In pages 5-9 of the Office Action, the examiner referred to numerous court cases that relate to the written description requirement issue in order to support his position that the present description does not reasonably support the claimed invention and it therefore cannot sufficiently describe the invention for the purpose of the written description requirement. The examiner mentioned that in claims involving chemical materials, generic formulae are required to indicate with specificity what the generic claim encompasses (see page 9, lines 2-6).

In reply, Applicants have amended the claims to include the generic structure of the claimed compounds, along the lines suggested by the examiner. In particular, main claim 1, as amended, now includes the chemical structures of compounds of formulas I and II, as defined in previous claim 7, and the claim now specifies that the negatively charged groups and the acidic groups are converted to negatively charged groups at the physiological pH, as defined in previous claims 4 and 5. Accordingly, main claim 1 now incorporates subject matter, i.e.,

the generic formula indicating the structure of the bacteriochlorophyll compounds of the claims, from claim 7, which was not included in this rejection. Further support for the structures can be found throughout the disclosure, for example, at original claim 7 and at paragraph [0022].

It is believed that this disclosure constitutes at least (1) a reduction to practice; (2) a reduction to drawings/chemical formulas; and (3) a disclosure of relevant identifying characteristics, such as structure or other physical and/or chemical properties, to sufficiently describe the claimed invention in full, clear, concise and exact terms, to show that Applicants were in possession of the bacteriochlorophyll compounds of the claims.

Thus, withdrawal of the rejection is requested.

V. Enablement Rejections

Enablement Rejection of Claim 42

Claim 42 has been rejected under 35 U.S.C. § 112, first paragraph, on the grounds that the specification fails to enable the full scope of the claims for the reasons set forth on pages 9-12 of the Office Action. On page 9, the examiner states that while the specification enables specific compounds disclosed in the specification, it is not enabled for esters as an intermediate compound. This rejection is respectfully traversed.

Claim 42, drawn to the compound Palladium bacteriopheophorbide a 17^3-(3-sulfo-1-oxysuccinimide) ester sodium salt as an intermediate, is rejected for lack of enablement, since in the examiner's opinion, the specification does not reasonably provide enablement (namely teach the preparation or identity) for esters as intermediates of the compounds and compositions containing them disclosed in the specification.

The examiner appears to be confused in interpreting the subject matter of claim 42 to mean specific compounds and esters of said compounds as precursors of the active bacteriochlorophylls of the invention, which regenerate into the free active form *in vivo* by one or more biological processes. In view of this misinterpretation, the examiner requires demonstration of *in vivo* pathways for obtaining the compounds of the invention from their esters precursors, and evidence of the solubility, bioavailability and stability of these esters in formulations for humans.

In order to strengthen his arguments, the examiner refers to the Wands factors (In re Wands, 8 USPQ2d 1400, 1404 (CAFC)) and contends, for instance, that the examples in the specification provide no guidance for the preparation of esters, or that the claim is too broad since it recites esters, for the preparation of which there are no specific examples or procedural

steps. Hence, the examiner concluded that to practice the claimed invention, a person of ordinary skill in the art would have to engage in undue experimentation to test which eater can be used with no assurance of success.

In reply, claim 42 is drawn to one specific oxysuccinimide derivative of bacteriochlorophyll (compound 6), which serves as an intermediate both in the preparation of compounds of formula II (e.g., compound 8) starting from compounds of formula I, and of compounds of formula I (e.g., compound 7), amidated at the 17^3 position. Conversion of compound 6 into either a bacteriochlorophyll (BChl) of formula I or II is an organic reaction that carried out in the laboratory. Such a conversion is not designed to take place *in vivo*. This oxysuccinimide ester is NOT a precursor or a latent form of a compound, which is converted to the active form *in vivo*. The synthesis of compound 6 is fully disclosed in Example 6 in the specification (paragraph 0136], its structure is depicted in Scheme 1, and there is absolutely no ground for the lack of enablement rejection against claim 42.

For these reasons, Applicants respectfully submit that previous claim 42 is adequately enabled by the specification. Nonetheless, for the sole purpose of expediting prosecution and not to acquiesce to the rejection, Applicants have amended the claim to remove the phrase "as an intermediate" in order to

clarify the claimed subject matter. Withdrawal of the rejection is requested.

Enablement Rejection of Claims 20-29

On page 12 of the Office Action, claims 20-29 have been rejected under 35 USC §112, first paragraph, for lack of enablement. This rejection is respectfully traversed, as applied to the amended claims.

The rejected are drawn to pharmaceutical compositions comprising the bacteriochlorophyll derivatives of the invention for photodynamic therapy. These claims were rejected for lack of enablement, on the grounds that there is insufficient teaching of how to use the compositions, as claimed. As best understood by Applicants, the main reason for the rejection is the examiner's position that these claims are directed to intended uses and intended use claims do not have patentability weight in the US (as stated by the examiner: "A pill…is a pill no matter what it is used for and thus intended use are not considered patentable").

Further, contrary to the examiner's position, the specification does disclose a therapeutic effect for the claimed bacteriochlorophyll compounds and pharmaceutical compositions thereof. See the discussion in the next section below.

Nonetheless, for the sole purpose of expediting prosecution and not to acquiesce to the rejection, Applicants have cancelled claims 20-29 without prejudice or disclaimer thereto.

Thus, the present amendment renders the rejection moot. Withdrawal of the rejection is respectfully requested.

Enablement Rejection of Claims 36, 38, and 40

On pages 13-22, claims 36, 37, 38, and 40 have been rejected under 35 USC §112, first paragraph, for lack of enablement. This rejection is respectfully traversed.

Claims 36, 37, 38 and 40, drawn to methods for treating or diagnosing tumors and age related macular degeneration, are rejected for lack of enablement, since the examiner interprets the term "tumor" as including any and all form of tumors as well as other non cancerous neoplasm and any kind of swelling arising from inflammation, and since the age-related macular degeneration (AMD) of claim 37 is interpreted as any and all forms of AMD. In light of this broad interpretation the examiner argues that "in spite of the vast expenditure of human and capital resources in recent years, no one drug has been found which is effective in treating all types of tumors because it is not a simple disease, nor is it even a single disease, but a complex of multiple of different entities, each having a different way".

The examiner, relying on the Wands factors, argues that an undue experimentation is required in order to establish a method for treating tumors and AMD generally and, under the wrong impression that he should act on behalf of the FDA, requires directions in the form of examples firm which it may be determined what are the effective dosages to treat the multitude of different types of tumors, administration profiles, combination ratios of the active agents, etc. On page 20, at the end of the third paragraph, the examiner states: "It should be noted that the therapeutic index of a drug in humans is almost never known and is only determined through clinical experience".

Applicants respectfully disagree with this rejection and the examiner's interpretation of the claims. In making the rejection, the examiner seems to have missed a very important object of the present invention, that being the provision of new sensitizers for vascular-targeted photodynamic therapy (VTP). See for instance, the disclosure at paragraphs [0115] and [0121]. It should be noted that claim 36 has been amended to more clearly reflect this feature. VTP is aimed at destruction of abnormal blood vessels associated with tumors and AMD, and is to be distinguished from tumor-targeted PDT, which is aimed at direct destruction of tumor cells per se. Since according to the present invention the target is blood vessels, the specific type of solid tumor or the neoplasm disease is of less relevance.

Indeed, VTP is a general method for treating a large variety of tumors and other pathological condition associated with abnormal blood vessels growth.

In this regard, see the disclosure starting at paragraph [0210], wherein the specification provides an example of the pharmacokinetics and biodistribution of a representative compound, i.e., Compound 4, of the claims. Example 15 of the specification shows that the sensitizer is trapped in the organ vasculature of the spleen, lung and heart, whereas its diffusion into the organ is negligible, and VTP of M2R melanoma xenografts, C6 glioma xenografts and age-related macular degeneration is exemplified in Examples 16-18.

Again, claim 36 has been amended to more clearly reflect this aspect of the invention. In particular, claim 36, as amended, recites a method for vascular-targeted PDT (VTP), in order to stress the main object of the invention. Again, support can be found on page 15, lines 15-21 (i.e., paragraph [0109]) and page 16, lines 25-27 (i.e., paragraph [0115]).

In addition, claim 37 has amended to recite a method for treatment of AMD by vascular occlusion. Support for treating AMD by vascular-targeted PDT can be found in Example 18, particularly page 33, lines 23-29 (paragraph [0214]).

In view of the above, it is believed that the skilled artisan, upon reading the disclosure and in view of the knowledge in the field, could practice the claimed methods of vascular-targeted PDT (claim 36) and treatment of AMD by vascular occlusion (claim 37) without undue experimentation. Thus, withdrawal of the rejection is requested.

Enablement Rejection of Claims 39 and 41

On pages 22-24, claims 39 and 41 have been rejected under 35 USC §112, first paragraph, for lack of enablement. This rejection is respectfully traversed.

Claims 39 and 41 are rejected for lack of enablement since, in the examiner's opinion, these claims should provide information such as what is being treated, the subject treated and how one can identify the subject, specific dose, specific dosing regimen, specific route of administration, and what disease or symptoms they intent to treat. Applicants disagree. Claims 39 and 41 are familiar in the US as "Jepson claims", namely method claims where one limitation is specifically identified as a point of novelty, distinguishable at least over the contents of the preamble. A Jepson claim is useful in calling the examiner's attention to a point of novelty of an invention without requiring the applicant to present arguments and possibly amendments to communicate the point of novelty to the examiner. The claim style

implies that the subject matter described in the preamble is prior art. Thus, since PDT and *in vitro* killing of cells and viruses constitute part of prior art, there is no need to show enablement. Once the point of novelty, namely a negatively charged bacteriochlorophyll of the invention, is enabled, as indeed is the case here, then the Jepson claim is enabled as well.

However, in order to expedite prosecution and allowance, claims 39 and 41 have been cancelled, without prejudice or disclaimer thereto, in favor of the remaining claims. Withdrawal of the rejection is requested.

in the amended set of claims we have deleted these claims, since they do not cover aspects of the inention which are not already claimed in the compounds claims.

VI. Indefiniteness Rejections

Claims 1-17, 19-29 and 42 have been rejected as being indefinite for the reasons set forth on pages 24 and 25. The examiner rejected the claims for the use of the terms: "derivative" (in claim 1), "intermediate" (in claim 42), "negatively charged groups", "acidic groups", and "natural or synthetic derivative" (in claims 1 and 6), and "heteroatoms" and "heterocyclic moieties" (in claim 7 and claims dependent thereon.

The claims have been amended to better define the claimed subject matter more clearly and distinctively in a non-narrowing manner to overcome this rejection for reasons which are self-evident. It should be noted that the objected language has been removed or replaced with clearer terminology.

For instance, in amended claims 1-3, 6, 10-17, 19, 40 and 47, whenever appropriate, Applicants replaced the term "derivative" with the term "compound", as requested by the examiner. In addition, Applicants amended claim 1 by including the structural formulae I and II, defining the radicals R_1-R_4 as defined in previous claim 7, and to specify the negatively charged groups and acidic groups as defined in previous claims 4 and 5. Claim 1 has also been amended to specify that the heteroatom is selected from the group consisting of O, N and S, and that a heterocyclic moiety may be a moiety such as pyridyl. Support for this amendment can be found on page 10 lines 9-10 of the description. Additionally, in claim 42, the term "intermediate" has been deleted.

The claims are thus clear, definite and have full antecedent basis.

This rejection is believed to be overcome, and withdrawal thereof is respectfully requested.

VII. Prior Art Rejections

Claims 1-18 have been rejected under 35 USC §102(b) as being anticipated by Scherz et al. (US 6,147,195) (hereinafter "US 6,147,195") for the reasons on page 26 of the Action. According to the examiner, US 6,147,195 discloses the exact bacteriochlorophyll compounds of the instant claims.

Claims 43-50 have been rejected under 35 USC §102(b) as being anticipated by Scherz et al. (US 5,955,585) (hereinafter "US 5,955,585") for the reasons on page 26 of the Action. According to the examiner, Scherz et al. US'585 discloses methods for preparing bacteriochlorophyll compounds, which are exactly the same methods of claims 43-50.

Claims 1-18 and 42 have been rejected under 35 USC §103(a) as being unpatentable over Schertz et al. (US 6,147,195) for the reasons on page 27. According to the examiner, US 5,955,585 teaches a generic group of bacteriochlorophyll derivatives which embrace the claimed compounds, making it obvious for a skilled person to select and prepare any of the species of the genus, including the compounds of the present application, and have reasonable expectation to succeed based on the assumption that any species of the genus have similar properties. The examiner states, what we regard as incorrect statement, that "A prior art disclosed genus of useful compounds

is sufficient to render prima facie obvious a species falling within a genus".

These rejections are respectfully traversed and will be discussed together below given the common references used in each rejection.

It is well established that to anticipate a claim, a cited prior art reference must disclose each and every element of the claimed invention. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); *See also*, M.P.E.P., Eighth Ed., Rev. 7 (July 2008) at § 2131. It is also settled that to support a *prima facie* case of obviousness, the Office must show that the cited prior discloses or suggests each and every element claims and/or provides a rationale showing that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions to yield predictable results. KSR International Co. v. Teleflex Inc., 550 U.S. 398, 418, 127 S. Ct. 1727, 82 U.S.P.Q.2d 1385, 1395 (2007); and M.P.E.P., Eighth Ed., Rev. 7 (July 2008) at § 2143.02.

Applicants respectfully submit that the rejections should fall, because neither US 6,147,195, nor US 5,955,585, nor their combination, discloses or suggests each and every element of independent claims 1, 18, and 42.

First, it should be noted that US 5,955,585 and US 6,147,195 are two related patents of the same Applicant of the present application. US 5,955,585 issued from a divisional application and US 6,147,195 issued from a continuation-in-part of application of application No. 08/097,384, now US Patent No. 5,726,169. These patents disclose conjugates of chlorophyll (Chl) and bacteriochlorophyll (Bchl) derivatives with amino acids, peptides and proteins, linked to the 17^3 position of said Chl and Bchl either directly or through a hydrocarbyl chain of 2 to 20 carbon atoms. The hydrocarbyl may be substituted by functional groups selected from OH, COOH or NH_2. The Chl and Bchl derivatives were defined as having the natural central Mg atom, or the Mg is deleted or substituted with another metal atom such as Cu, Ni, Zn, V, Co, Sn and other divalent metals. Fig. 3 and Fig. 5 in these patents depict a pentacyclic Bchl wherein the metal M is Mg and R (at position 17^3) is either phytyl or carboxyseryl serine ester (Z-Ser_2-OMe).

However, it is noted that bacteriochlorophyll (Bchl) compounds containing a metal atom other than Mg are not described or taught in US 6,147,195 and US 5,955,585. Indeed, it is believed that US 6,147,195 and US 5,955,585 are not enabled for this aspect of the claimed invention for the reasons discussed herein. In this regard, it is well established that "In determining that quantum of prior art disclosure which is

necessary to declare an applicant's invention 'not novel' or 'anticipated' within section 102, the stated test is whether a reference contains an 'enabling disclosure'... ." *In re Hoeksema*, 399 F.2d 269, 158 USPQ 596 (CCPA 1968). The disclosure in an assertedly anticipating reference must provide an enabling disclosure of the desired subject matter; mere naming or description of the subject matter is insufficient, if it cannot be produced without undue experimentation. *Elan Pharm., Inc. v. Mayo Found. For Med. Educ. & Research*, 346 F.3d 1051, 1054, 68 USPQ2d 1373, 1376 (Fed. Cir. 2003).

In this regard, Example 10 in the cited patents actually describes only the preparation of Zn and Cu chlorophyll derivatives, but not of Zn and Cu bacteriochlorophyll derivatives, as called for in main claims 1, 18, and 42.

Further, it is noted that only two Bchl derivatives are specifically exemplified in US 5,955,585 and US 6,147,19. Example 6 describes the preparation of L-seryl methyl ester bacteriochlorophyllide a (Bchla-L-Ser-OMe) by enzymatic transesterification of Bchla with L-serine methyl ester. Example 9 describes the preparation of Bchla-tyrosine conjugates by catalytic esterification of Bchlidea with Z-Ser_2-Ome and N-tBOC-Tyr-OMe. These compounds have higher hydrophilicity compared to natural bacteriochlorophylls.

Yet, as disclosed in the background section of the instant application (paragraph bridging pages 3 and 4), these Bchl derivatives are highly efficient anti-vascular sensitizers that do not extravasate from the circulation after administration and have a short lifetime in the blood, especially the derivative Bchl-Ser, which was found to be water-soluble and highly phototoxic in cell cultures. However, the Bchl-Ser derivative was found to be unstable, and like native Bchl, underwent rapid photo-oxidation forming the corresponding 2-desvinyl-2-acetyl-chlorophyllide ester and other products.

It should be stressed that the teachings in the prior art for chlorophylls cannot, in most cases, be used as prior art for bacteriochlorophylls. This is because the chemistry of chlorophylls and bacteriochlorophylls is not the same. Nor are they suggestive of each other. This is due to the structural and chemical differences between the two molecules. As shown in Fig. 2 of US 5,955,585 and US 6,147,195, chlorophyll *a* has at position 3 a vinyl group, and a double bond at positions 7-8 of the porphyrin ring, while in bacteriochlorophyll *a* (Fig. 3) the porphyrin ring is further reduced (7-8), and the group in position 3 is a $-COCH_3$ group. Although the structural formulas of chlorophyll *a* and bacteriochlorophyll *a* seem appear to be close in structure, they are not. In fact, the porphyrin ring hydrogenated at positions 7-8 makes the bacteriochlorophyll molecule much more sensitive and,

therefore, less stable than chlorophyll in chemical reactions suitable for the synthesis of chlorophyll derivatives. For example, metalation of Bchls is known to be more difficult than that of chlorophylls due to their decreased reactivity for metalation and increased reactivity for side reactions.

In order to successfully synthesize a desired, stable and water soluble Bchl compound bearing negatively charged groups and containing a metal atom other then Mg, as in the present claims, starting with the relatively sensitive and unstable natural compound, the skilled practitioner would have to be equipped with all the information and motivation, which for practical purposes, would enable him/her to carry out the preparation and testing successfully, without the aid of inventive genius present in the claimed compounds. Such information includes a detailed experimental protocol and test results showing that the desired compound was in fact obtained in a certain yield and can indeed be prepared under the specified conditions.

However, for the reasons discussed, US 6,147,195 and US 5,955,585 do not suggest the claimed water soluble bacteriochlorophyll derivatives of the present application; the cited patents do not provide an enabling disclosure with respect to their preparation. The successful synthesis of the Bchl derivatives of the present application cannot be anticipated, nor

can be they be suggested, based on the sole Bchl serine (Bchl-Ser) and Bchl tyrosine (Bchl-Tyr) esters conjugates disclosed in US 5,955,585 and US 6,147,195.

Thus, a skilled artisan/chemist, knowing that the chemistry of bacteriochlorophylls is problematic and cannot be straight forwardly deduced from the known chemistry of chlorophylls, will realize that the mere mention in a publication of the complexed Bchl compound, drawing of its structure or even providing prophetical directions as to its preparation, does not anticipate, nor render obvious, the compound of claim 1. It certainly does not provide any suggestion to modify the prior art teachings to arrive at the claimed compounds with any reasonable expectation of success. Given the above noted differences in chemical structure and properties between chlorophylls and bacteriochlorophylls and the difficulties in preparing bacteriochlorophylls, it would not have been predictable to combine and then modify the teachings of US 6,147,195 and US 5,955,585 to arrive at the claimed bacteriochlorophyll compounds.

Furthermore, it is a fact that none of the Bchl conjugates taught and exemplified in US 5,955,585 and US 6,147,195 is a bacteriochlorophyll derivative, which contains at least one negatively charged group or an acidic group that is converted to a negatively charged group at physiological pH, as required in the Bchl derivatives of claim 1 of the present

application. Although the cited patents claim pentacyclic Bchl derivatives, which may contain the acidic group -COOH, and perhaps claim a process of catalytic condensation for the preparation of said Bchl derivatives, US 5,955,585 and US 6,147,195 do not actually disclose or exemplify, such a Bchl derivative, or a process for preparation thereof.

Furthermore, US 5,955,585 and US 6,147,195 refer solely to pentacyclic bacteriochlorophyll derivatives consisting of 4 pyrrole rings and a fifth isocyclic ring as described in Fig. 3 therein. Please note that tetracyclic derivatives of bacteriochlorophyll corresponding to claimed compounds of formula II of the present application, are not mentioned, described, drawn, taught or exemplified in US 5,955,585 and US 6,147,195.

Consequently, there is no rationale in the references or the rejection itself for combining and then modifying the teachings of these patents to arrive at the claimed compounds. As such, the skilled artisan would not be able to derive the claimed compounds of formula II of the present invention on the basis of compounds that are not mentioned, taught or exemplified in US 5,955,585 and US 6,147,195.

Based on the above, it is respectfully submitted that the combination of US 6,147,195 and US 5,955,585 would not yield predictable results, let alone arrive at the claimed compounds of the present application.

Finally, the fact remains that the claimed compounds of the present invention were not obtained by the routine experimentation. Instead, to obtain the claimed compounds, the Applicants, by way of the present application, had to first design the special conditions that were not described nor suggested in the prior art patents.

For these reasons, it would not have been predictable to combine and modify the teachings of the prior art patents to arrive at the claimed compounds.

For these reasons, US 6,147,195 and US 5,955,585, taken alone or when combined, cannot be said to teach each and every element of main claims 1, 18, and 42. Thus, claim 1 and all claims dependent thereon are believed to be novel and patentable over US 6,147,195 or US 5,955,585, alone, or any combination thereof.

As all of the remaining claims depend, either directly or indirectly, from claim 1, it is believed that the argument in favor of patentability of claim 1 suffices for all of the claims.

Thus, withdrawal of the 102(b) and 103(a) rejections of the claims over US 6,147,195 and US 5,955,585 is requested.

VIII. Conclusion

Having addressed all the outstanding issues, this paper is believed to be fully responsive to the Office Action. It is

respectfully submitted that the claims are in condition for allowance, and favorable action thereon is requested.

If the Examiner has any comments or proposals for expediting prosecution, please contact the undersigned attorney at the telephone number below.

Respectfully submitted,

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